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## Hypertension and Other Cardiovascular Disease Risk Factors among Mexican Americans, Cuban Americans, and Puerto Ricans from the Hispanic Health and Nutrition Examination Survey

### SYNOPSIS

DESPITE THEIR HIGHER PREVALENCE of obesity and diabetes, Hispanics have lower or equal rates of hypertension than non-Hispanic whites (1–4). Healthy People 2000 objectives call for increasing the proportion of hypertensive men whose blood pressure is under control to at least 40%. In addition, the objectives recommend reducing the prevalence of overweight to 41% among hypertensive women, and to 35% among hypertensive men (5).

The Hispanic Health and Nutrition Examination Survey (HHANES) collected data on Mexican Americans (MA), Cuban Americans (CA), and Puerto Ricans (PR) living in the continental United States. A trained physician measured systolic (SBP) and diastolic (DBP) blood pressure twice in one visit. Our findings provide data to assess baseline estimates for several Healthy People 2000 objectives among Hispanics.

Based on criteria from *The Fifth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure* (JNC-V), we found Hispanic women to have higher rates of awareness, treatment, and control of hypertension than men. Only 8% of MA and PR men and 9% of CA men who were hypertensive had their high blood pressure under control. The prevalence of overweight among hypertensive men ranged from 39% to 60%; and among hypertensive women, from 44% to 74%. Hispanic women with six or fewer years of education had higher prevalence of hypertension and other cardiovascular disease (CVD) risk factors. Future research should investigate the socioeconomic factors associated with the presence of these risk factors.

**M**exican Americans (MA) and Puerto Ricans (PR) exhibit higher prevalence of obesity and diabetes than non-Hispanic whites (NHW) (1,2). Yet, the observed prevalence of hypertension and mean blood pressures among MA and PR is lower than or equal to similar estimates for NHW (1–4).

Few studies have examined the health status of Cuban Americans (CA). These have reported that the prevalence of hypertension among CA is similar to those of MA and PR, and lower than NHW (3).

The Healthy People 2000 objectives provide a framework to reduce disparities in health status among various population groups within our society (5). One objective calls for increasing the proportion of hypertensive men whose blood pressure is under control to at least 40%. Another objective recommends reducing the prevalence of overweight to 35% among hypertensive men and to 41% among hypertensive women (5).

We used guidelines from *The Fifth Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure* (JNC-V) (6) to reassess the prevalence, awareness, treatment, and control of hypertension among Hispanics. We also include here estimates of the prevalence of overweight among hypertensive men and women. Thus, our findings will provide baseline data to assess Healthy People 2000 objectives 15.4a, 1.2f, and 1.2g among Hispanics using JNC-V criteria.

## Methods

The Hispanic Health and Nutrition Examination Survey (HHANES), conducted from 1982 to 1984, collected data on the civilian, noninstitutionalized population of MA, CA, and PR living in selected regions of the continental United States (7).

A trained physician measured blood pressure in a mobile examination center using a standard mercury sphygmomanometer. The physician measured systolic (SBP) and diastolic (DBP) blood pressure twice in one visit, taking two measurements at least 5 minutes apart with the participant seated.

For this analysis we used the averages of the two measurements of SBP and DBP. To calculate body mass index (BMI), we used the standard formula (kg/m<sup>2</sup>). Descriptions of the complex sample design, procedures, and measurements of HHANES are available elsewhere (7). Survey Data Analysis (SUDAAN) software package (8) was used to calculate standard errors of all estimates.

## Results

We stratified the analytic sample into four education levels to investigate prevalence of hypertension and other cardiovascular (CVD) risk factors by education. Hypertension was defined as systolic or diastolic blood pressure  $\geq 140/90$  mmHg or currently taking antihypertensive medication. For each ethnic and gender group we present results separately.

Hispanic women in the three ethnic groups were more aware of their hypertensive status than men (Table 1). The percentage of hypertensive women under treatment and with controlled blood pressure was also greater than among men. Less than 9% of Hispanic men with hypertension had their high blood pressure under control ( $< 140/90$  mmHg). CA women were more aware of their hypertensive status (91%) than 76% of MA and 66% of PR women. Regardless of medication, stage 1 hypertension was more common among men (13% to 15%) than among women (7% to 11%). About 3% to 6% of Hispanics had SBP or DBP  $\geq 160/100$  mmHg regardless of treatment status.

Overweight was more common among women than men (Table 2). MA and PR women had higher rates of overweight than any other group (41.8% of MA and 40% of PR). Hypertensive men and women had a higher prevalence of overweight than the normotensive Hispanic

**Table 1. Age-adjusted prevalence of hypertension, awareness, treatment, and control of hypertension, and high blood pressure distribution among Mexican Americans, Cuban Americans, and Puerto Ricans ages 18 to 74 from HHANES**

Race/Ethnic Group	Sex	Age	n	Prevalence <sup>a</sup>	Aware <sup>b</sup>	Treatment <sup>c</sup>	Control <sup>d</sup>	Stage 1 <sup>e</sup>	Stages 2-4 <sup>f</sup>
Mexican Americans	Men	35	1554	22.7%	40%	16%	8%	15%	6%
	Women	37	1964	19.2%	76%	55%	34%	11%	3%
Cuban Americans	Men	43	401	20.9%	49%	23%	8%	13%	5%
	Women	44	497	13.6%	91%	41%	14%	7%	4%
Puerto Ricans	Men	37	495	20.4%	53%	19%	9%	13%	6%
	Women	36	835	17.6%	66%	43%	28%	9%	4%

<sup>a</sup> Hypertension is defined as systolic or diastolic blood pressure greater than or equal to 140/90 mmHg or currently on antihypertensive medication.

<sup>b</sup> Aware is defined as participants who have been told by a physician or health professional that they have high blood pressure or hypertension.

<sup>c</sup> Treatment is defined as participants who are currently on antihypertensive medication.

<sup>d</sup> Control is defined as participants who are currently treated and have mean blood pressures less than 140/90 mmHg.

<sup>e</sup> Stage 1 is defined as mean systolic blood pressure distributions between 140 and 159 mmHg or mean diastolic blood pressure between 90 and 99 mmHg regardless of medication.

<sup>f</sup> Stages 2 to 4 are defined as mean systolic blood pressure greater than or equal to 160 mmHg or diastolic blood pressure greater than or equal to 100 mmHg regardless of medication.

**Table 2. Age-adjusted mean body mass index and prevalence of overweight, overweight among hypertensives, high serum cholesterol, smoking and the combination of hypertension plus smoking among Mexican Americans, Cuban Americans, and mainland Puerto Ricans ages 20 to 74 from HHANES**

Race/Ethnic Group	Sex	BMI <sup>a</sup>	Prevalence of Overweight <sup>b</sup>	Overweight by Hypertension		High Serum Cholesterol <sup>e</sup>	Smoking <sup>f</sup>	Hypertension Plus	
				Yes <sup>c</sup>	No <sup>d</sup>			High Chol <sup>g</sup>	Smoking
Mexican Americans	Men	26.1	30.6%	48%	26%	18.5%	43.4%	5.6%	9.2%
	Women	27.0	41.8%	63%	40%	19.4%	23.8%	7.0%	3.3%
Cuban Americans	Men	26.0	28.0%	60%	25%	15.2%	41.8%	7.0%	7.7%
	Women	25.5	31.4%	74%	29%	16.0%	25.8%	6.0%	2.3%
Puerto Ricans	Men	25.8	25.3%	39%	24%	17.1%	40.9%	6.3%	5.6%
	Women	26.6	40.0%	44%	38%	20.6%	31.4%	7.2%	3.0%

<sup>a</sup> BMI is defined as weight in kilograms divided by height in meters squared.  
<sup>b</sup> Men are considered overweight if their BMI is greater than or equal to 27.8; women are considered overweight if their BMI is greater than or equal to 27.3.  
<sup>c</sup> Percent of men and women with high blood pressure (SBP or DBP greater than or equal to 140/90 mmHg or currently taking antihypertensive medication) who are overweight.  
<sup>d</sup> Percent of normotensive participants (not taking antihypertensive medication and SBP and DBP less than 140/90 mmHg) who are overweight.  
<sup>e</sup> High serum cholesterol is defined as serum cholesterol levels greater than or equal to 240 mg/dL.  
<sup>f</sup> Smoking based on self-reported data of smoking one or more cigarettes a day.

population. The prevalence toward overweight was twice as high among hypertensive MA men and CA men and women than among their normotensive counterparts. Similar differences were not observed in the other ethnic-gender subgroups. The prevalence of high serum cholesterol ranged from 15% to 21% across the groups (Table 2). Cigarette smoking was reported more frequently among men than among women. The percent of Hispanics with both hypertension and high serum cholesterol ranged from 5% to 7% with minor gender differences. However, the combined prevalence of hypertension with cigarette smoking was 2 to 3 times higher among men than among women.

The following results are not included in the tables: We found that the CA cohort had more years of education than the MA and PR cohorts. Age-specific estimates showed an increased prevalence of hypertension among older adults. Men showed no obvious trend in the unadjusted prevalence of hypertension at different levels of education. However, women with 6 or fewer years of education had higher prevalence of hypertension than women with more education. This group of least educated women had lower levels of awareness, treatment, and control of hypertension. Also, the prevalence of hypertension and high serum cholesterol combined was higher among women with lower educational attainment.

**Discussion**

In other cross-sectional and longitudinal studies (1,2,4), observers have documented the prevalence of hypertension. Hispanic women are more likely to know

of, treat, and control their hypertension than men. The Healthy People 2000 target is to increase to 40% the percentage of hypertensive men with blood pressure below 140/90 mmHg. Between 1982 and 1984, only 8% of MA and PR men and 9% of CA men who were hypertensive had their high blood pressure under control. In the Hispanic cohort ages 20 to 74 we found that the prevalence of overweight among hypertensive men ranged from 39% to 69%; and among hypertensive women, from 44% to 74%. Sixty percent or more of the MA women and CA men and women who were hypertensive were also overweight. In general, overweight prevalence was higher among hypertensive Hispanics than among those who were normotensive. Preliminary findings from the Third National Health and Nutrition Examination Survey showed that 46.3% of MA women reported participating in no leisure time physical activity (9). This leisure time sedentary lifestyle was higher than that of non-Hispanic whites and non-Hispanic blacks and may partially explain the increased prevalence of overweight.

Women with less education had consistently higher prevalence of hypertension and other combined CVD risk factors. For example, the prevalence of having two risk factors, such as high serum cholesterol and hypertension or smoking and hypertension, was higher among these women, suggesting a need for further study of the socio-cultural implications of low educational attainment for hypertension and other CVD risk factors.

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